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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/748,305

12/30/2003

Stefan Bader

5367-73

8024

7590 02/01/2007  
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EXAMINER

KACKAR, RAM N

ART UNIT

PAPER NUMBER

1763

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/01/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/748,305

Applicant(s)

BADER ET AL.

Examiner

Ram N. Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-27 is/are pending in the application.
- 4a) Of the above claim(s) 4-13 and 20-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 14-19 and 23-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/11/2007 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-2, 14-19 and 23-27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In this instance recitation of "and comprises at least four steps" is new matter. There is no appreciation of the number of steps or, that the number could not be less than four. In fact in paragraph 17 of the specification there is a recitation of two or more circumferential steps.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 1-2, 14-19, 23 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Lie et al (US 6494955).**

Lie et al disclose a substrate support assembly in a CVD chamber (Fig 1) with gas inlet and exhaust and show a temperature-controlling surface having distinct circumferential steps (Fig 2A- 208, 226, 224 and 222) to provide variable gap for controlling heat conductivity (Col 3 line 54- Col 4 line35). The number of steps as can be seen is four, including the step in contact with the substrate.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1-2, 14-19, 23 and 26 are rejected under 35 U.S.C. 103(a) as obvious over Gurary et al (US 6001183).**

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Gurary et al disclose a substrate holder which could be used in an epitaxial deposition having three dimensional structures for control of temperature at the surface of the susceptor by providing controlled thermal conductivity at different regions (Abstract, Fig 1-Fig 16). The stepped relief structure is disposed centrally especially at (Fig 16-113). The different structures could have smooth curved transition or stepped transition (Col 13 line 58- 62). The substrate could be mounted in a recess or on step in recess. The substrate could be edge supported as in Fig 16. The epitaxial deposition system as inherent and as disclosed used gases and discloses exhaust.

Regarding the number of steps, since steps could substitute a curved surface, it would be obvious to have steps to provide uniformity of temperature. Further it is easy to see that large number of steps with smaller dimensions approximates a curve. So it would be obvious to have more than four steps to provide better resolution of temperature control.

**8. Claims 1-2, 14-19, 23 and 26 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Gurary et al (US 6001183) in view of Lie et al (US 6494955).**

Gurary et al disclose a substrate holder which could be used in an epitaxial deposition having three dimensional structures for control of temperature at the surface of the susceptor by providing controlled thermal conductivity at different regions (Abstract, Fig 1-Fig 16). The different structures could have smooth curved transition or stepped transition (Col 13 line 58-62). The substrate could be mounted in a recess or on step in recess.

Gurary et al suggest stepped surface in place of a continuous curved surface as equivalent. As explained below Lie et al show stepped surface more explicitly. Lie et al show a

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temperature-controlling surface having distinct steps (Fig 2A) to provide variable gap for controlling heat conductivity (Col 3 line 54- Col 4 line35). The number of steps as can be seen is four, including the step in contact with the substrate.

Therefore having steps for gap control for controlling thermal conductivity for temperature profile control would have been obvious for one of ordinary skill in the art at the time of invention.

**9. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gurary et al (US 6001183) or Lie et al (US 6494955) in view of Satoh (US 6063203).**

Gurary et al or Lie et al do not disclose surface roughness of the substrate holder.

However surface roughness of substrate holders are kept low for different reasons.

Satoh teaches that lower surface roughness from 2-8 $\mu$ m helps in reducing frictional wear (Col 6 lines 45-55).

Therefore having surface roughness below 10  $\mu$ m would have been obvious for one of ordinary skill in the art at the time of invention.

**10. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gurary et al (US 6001183) or Lie et al (US 6494955) in view of Goodman et al (US 6454865).**

Gurary et al or Lie et al do not disclose the substrate holder made of solid silicon carbide material.

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Goodman et al teach that Silicon carbide is a material of choice for susceptors in CVD applications (Col 7 lines 56-66) for its strength, thermal properties and resistance to high temperature.

Therefore having a material of SiC for susceptor of Gurary or Lie et al would have been obvious to one of ordinary skill in the art at the time of invention.

### ***Response to Arguments***

Applicant's arguments filed 1/11/2007 have been fully considered but they are not persuasive.

Applicant seems to suggest that the teaching of Gurary et al at (Col 13 line 58- 62). Could not be applied to the orientation of steps as in Fig 16. This point is not persuasive as the teaching does not seem to apply only to the embodiment of Fig 15 and would not be according to common sense.

Applicant's statement that Lie et al have only two steps is not understood. The specification does not contain a special definition of steps, other than a commonly understood.

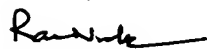
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ram Kackar

Primary Examiner AU 1763